

Claims

1. A broadband driver for signals that are transmitted in different frequency ranges,  
5 comprising:
  - (a) a first broadband driver circuit (19) for driving first signals having signal frequencies that lie in a first frequency range;
  - (b) a second broadband driver circuit (24) for driving  
10 second signals having signal frequencies that lie in a second frequency range;
  - (c) where at least one of the two broadband driver circuits (19) has a frequency-dependent positive-feedback circuit (44) for impedance synthesis of a  
15 frequency-dependent output impedance ( $Z_{out}$ ) of the broadband driver circuit (19), and where the output impedance ( $Z_{out}$ ) has a different value in the first frequency range than in the second frequency range.
- 20 2. The broadband driver as claimed in claim 1, wherein  
the first broadband driver circuit (19) is designed to drive audio frequency voice signals,  
25 audio frequency ringing signals and DC signals.
3. The broadband driver as claimed in claim 1 or 2, wherein  
the second broadband driver circuit (24) is  
30 designed to drive radio frequency data signals.
4. The broadband driver as claimed in one of the preceding claims,  
wherein  
35 the first broadband driver circuit (19) has a signal preamplifier circuit (60) connected to its input.

5. The broadband driver as claimed in one of the preceding claims,  
wherein  
the positive-feedback circuit (44) feeds a signal output (20) of the first broadband driver circuit (19) to a signal input of the first broadband driver circuit (19).
6. The broadband driver as claimed in claim 4,  
wherein  
the positive-feedback circuit (44) feeds the signal output (20) of the first broadband driver circuit (19) to a signal input of the signal preamplifier circuit (60).
7. The broadband driver as claimed in one of the preceding claims,  
wherein  
the positive-feedback circuit (44) has a complex impedance.
8. The broadband driver as claimed in one of the preceding claims,  
wherein  
the positive-feedback circuit (44) contains a capacitor.
9. The broadband driver as claimed in one of the preceding claims,  
wherein  
the complex impedance of the positive-feedback circuit (44) decreases as the signal frequency increases.
10. The broadband driver as claimed in one of the preceding claims,  
wherein  
the broadband driver circuits (19, 24) have a fully differential design.

11. The broadband driver as claimed in one of the preceding claims 4 to 10,  
wherein  
the signal preamplifier circuit (60) has a fully  
5 differential design.
12. The broadband driver as claimed in one of the preceding claims,  
wherein  
10 the signal outputs (20, 27) of the two broadband driver circuits (19, 24) are connected in parallel and are connected to a transmission channel (13) via a signal output (12) of the broadband driver (1).
13. The broadband driver as claimed in claim 12,  
wherein  
the transmission channel (13) is a two-wire  
15 telephone line.
14. The broadband driver as claimed in one of the preceding claims,  
wherein  
the signal output of the second broadband driver  
20 circuit (24) is connected to a transformer circuit (81).
15. The broadband driver as claimed in one of the preceding claims 3 to 14,  
wherein  
30 the radio frequency data signal is an xDSL signal.
16. The broadband driver as claimed in claim 15,  
wherein  
35 the radio frequency data signal is an ADSL data signal.